Car Entertainment System

CED780/51/55/98

Service
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Service Manual

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CLASS 1
LASER PRODUCT

Published by JOEY_SL WK1147 BG LE Printed in The Netherlands Subject to modification

314178536641

Version 1.1

PHILIPS

SPECIFICATIONS

General

Power supply	*12 V DC (11 V - 16 V), negative ground*
Fuse	*15 A*
Suitable speaker impedance	*4 - 8 Ω*
Maximum power output	*50 W x 4 channels*
Continuous power output	*24 W x 4 channels (4 Ω 10% T.H.D.)*
Pre-Amp output voltage	*4.0 V (CD play mode; 1 kHz, 0 dB, 10 kΩ load)*
Subwoofer output voltage	*4.0 V (CD play mode, 61 Hz, 0 dB, 10 kΩ load)*
Aux-in level	*≥ 500 mV*
Dimensions (W x H x D)	*178 x 50 x 210 mm*
Weight (main unit)	*3.1 kg*

Disc player

System	*DVD / CD audio / MP3 system*
Frequency response	*20 Hz - 20k Hz*
Signal/noise ratio	*>75dB*
Total harmonic distortion	*Less than 1%*
Channel separation	*>55dB*
Video signal format	*NTSC only*
Video output	*1 +/- 0.2V*

Radio

Frequency range - FM	*87.5 - 108.0 MHz (50kHz per step)*
Frequency range - AM(MW)	*522 - 1620 KHz (9kHz per step)*
Usable sensitivity - FM	*5 uV*
Usable sensitivity - AM (MW)	*25 uV*

LCD

Screen size	*7.0 inches*
Display resolution	*800 x 480 dots*
Contrast ratio	*500*
Brightness	*450 cd/m2*

Bluetooth

Communication system	*Bluetooth Standard version 2.0*
Output	*Bluetooth Standard Power Class 2*
Maximum communication range	*Line of sight approx. 8m*
Frequency band	*2.4 GHz band (2.4000 GHz - 2.4835 GHz)*
Compatible Bluetooth profiles	Hands-Free Profile (HFP) Handset Profile (HSP) *Advanced Audio* Distribution Profile (A2DP) *Audio Video Remote* Control Profile (AVRCP)
Supported codecs	
Receive	*SBC (Sub Band Codec)*
Transmit	*SBC (Sub Band Codec)*

Playability information

Compatible USB devices:

- USB flash memory (USB 2.0 or USB1.1)
- USB flash players (USB 2.0 or USB1.1)
- Memory cards (SD / MMC / SDHC)

Supported USB formats:

- USB or memory file format: FAT16, FAT32
- MP3 bit rate (data rate): 32-320 Kbps and *variable bit rate*
- WMA v9 or earlier
- Directory nesting up to a maximum of 8 *levels*
- Number of albums/folders: maximum 99
- Number of tracks/titles: maximum 999
- ID3 tag v2.0 or later
- File name in Unicode UTF8 (maximum *length: 128 bytes)*

Supported MP3 disc format:

- ISO9660, Joliet
- Maximum title number: 512 (depending on file name length)
- Maximum album number: 255
- Supported sampling frequencies: 32 kHz, *44.1kHz, 48 kHz*
- Supported Bit-rates: 32-320 Kbps and *variable bit rate*

Supported video formats:

The following video formats(containers) are supported on current product:

- MPEG1 (*.avi, *.mpg, *.dat)
- MPEG4 (simple profile) (*.avi)
- DIVX4 (*.avi)
- DIVX5 (*.avi)
- XVID (*.avi)

NOTE:

To ensure smooth playback, the image size should not be higher than 640X480, frame rate should not be higher than 20 fps and data rate should not be higher than 500kbps in the encoded video.

Unsupported video formats:

The following video formats(containers) cannot be supported on current product:

- M-JPEG (*.avi, *.mov)
- MPEG4 (*.mov, *.wmv, *.mp4, *.3g2, *.asf, *.3gp)
- H.263 (*.avi, *.mov, *.flv, *.3gp)
- H.264 (*.mp4, *.mov)
- WMV3 (*.wmv, *.avi)
- WMV2 (*.wmv)
- RealVideo4 (*.rmvb, *.rm)
- RealVideo3 (*.rm)
- RealVideo2 (*.ram)
- MS Video (*.avi)

NOTE:

For format(container) not listed above, it is not guaranteed to work. Please avoid from using with the product.

CED780 Dismantlement Method

1. Take out the three screws at heat sink, the six screws at the left right side of the main unit and the screw at the base panel

Take out the screws at heat sink

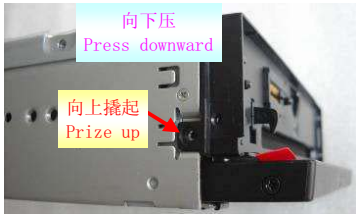
Take out the screws at the left side of the unit

Take out the screws at the right side of the unit

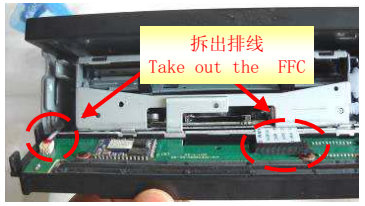
Take out the screw at base panel

2. Prize up the left right hook of the base panel and take out the base panel, separate the bottom cover from the unit

Disassemble the left side of the base panel



Disassemble the right side of the base panel

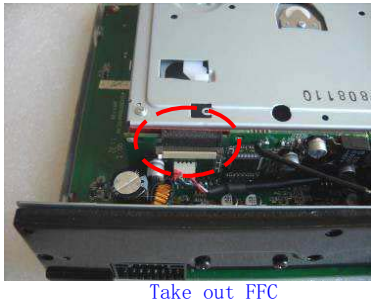


Disassemble the FFC at base panel

Disassemble the top cover

Separate the component of the button cover

3. Take out the FFC which connect to main board, and take out the fixed screws of the back cover, then take out the FFC at the deck mechanism


Take out FFC

Take out the screws at deck mechanism

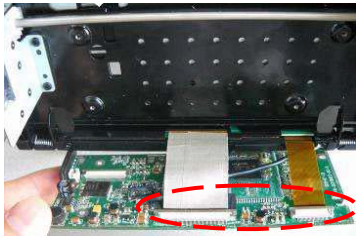
Lift up deck mechanism

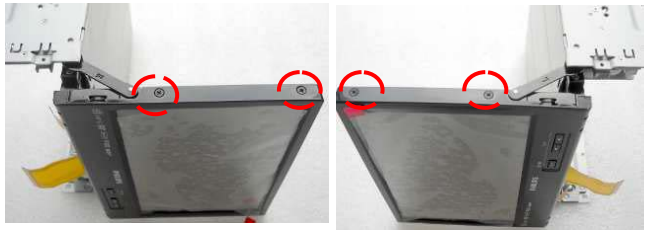
Disassemble the FFC at deck mechanism

Disassemble deck mechanism

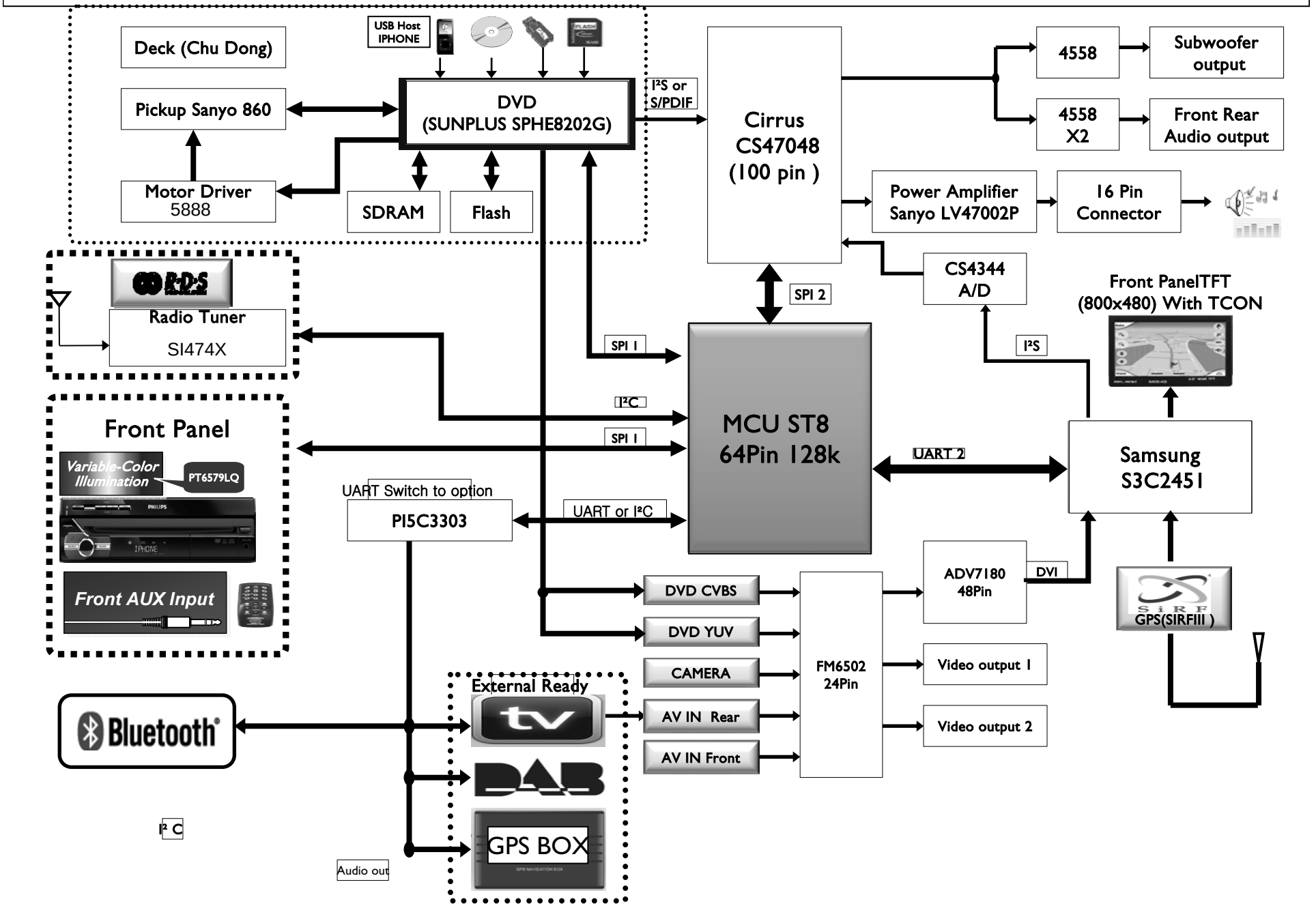
4.Disassemble black wire and FFC first, then take out the screws around TFT

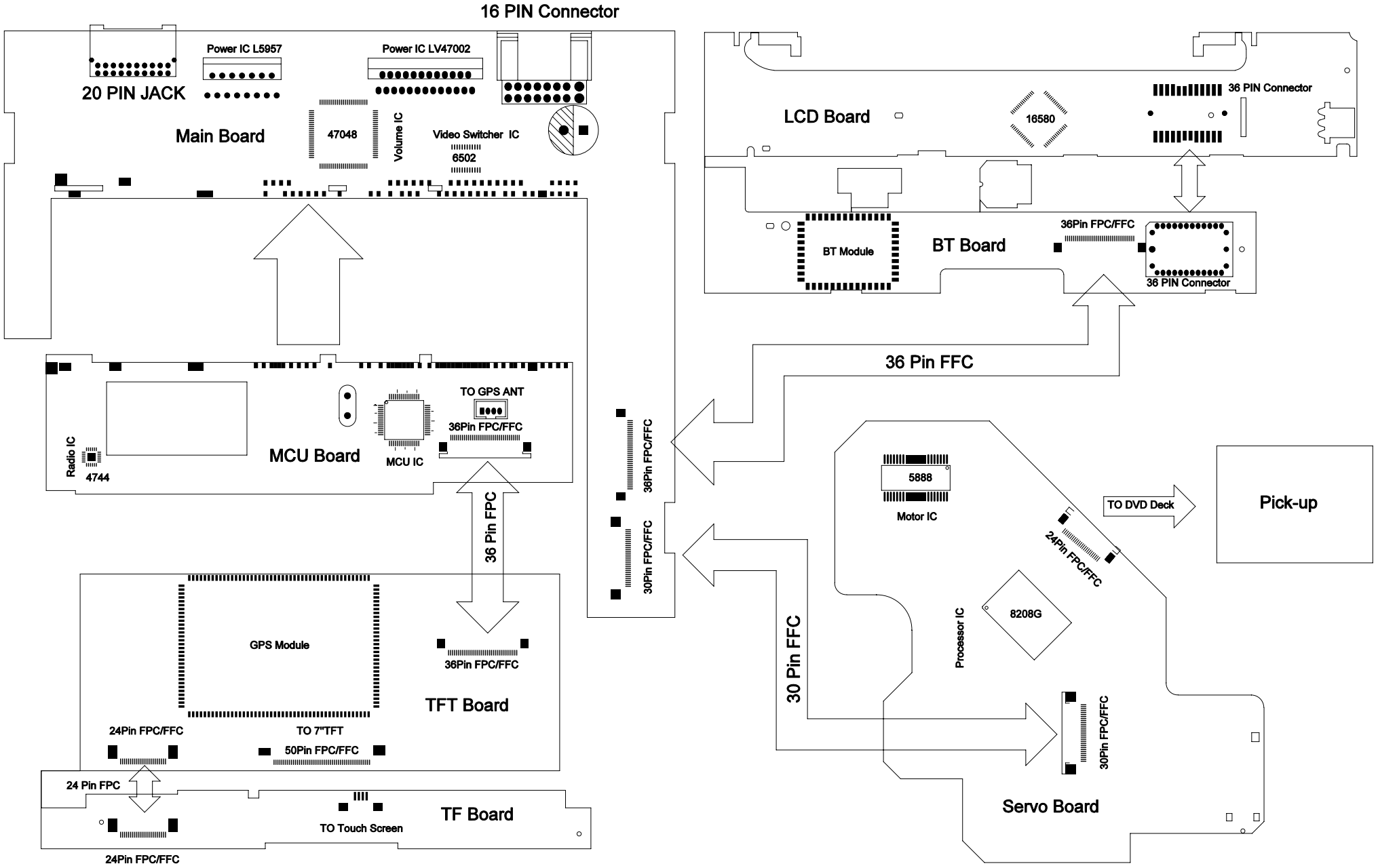
Take out the wire and motor wire


Disassemble the FFC

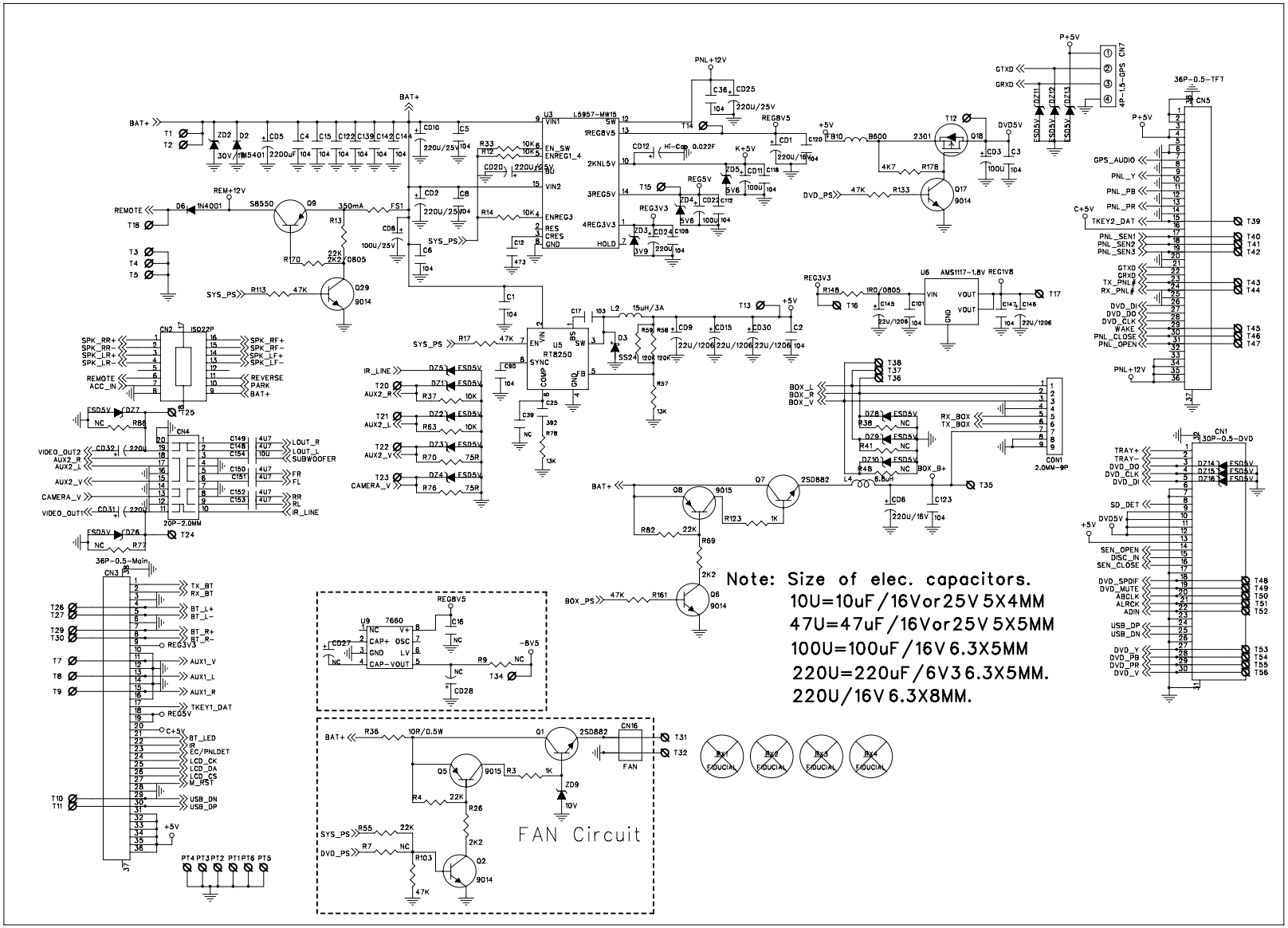

Take out the screws around TFT

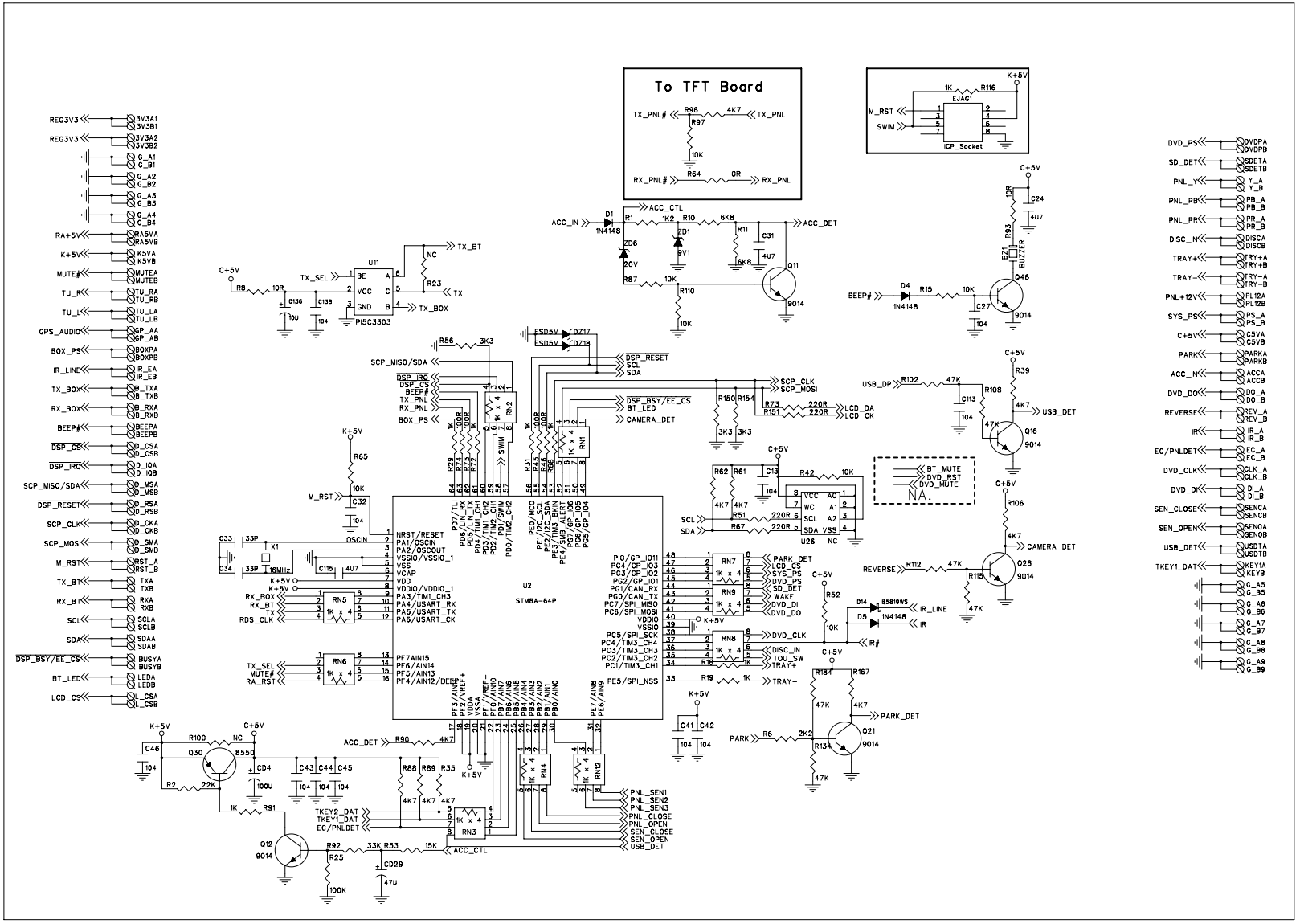
CED780(B) Block Diagram --S3C2451 & CS4728 Solution

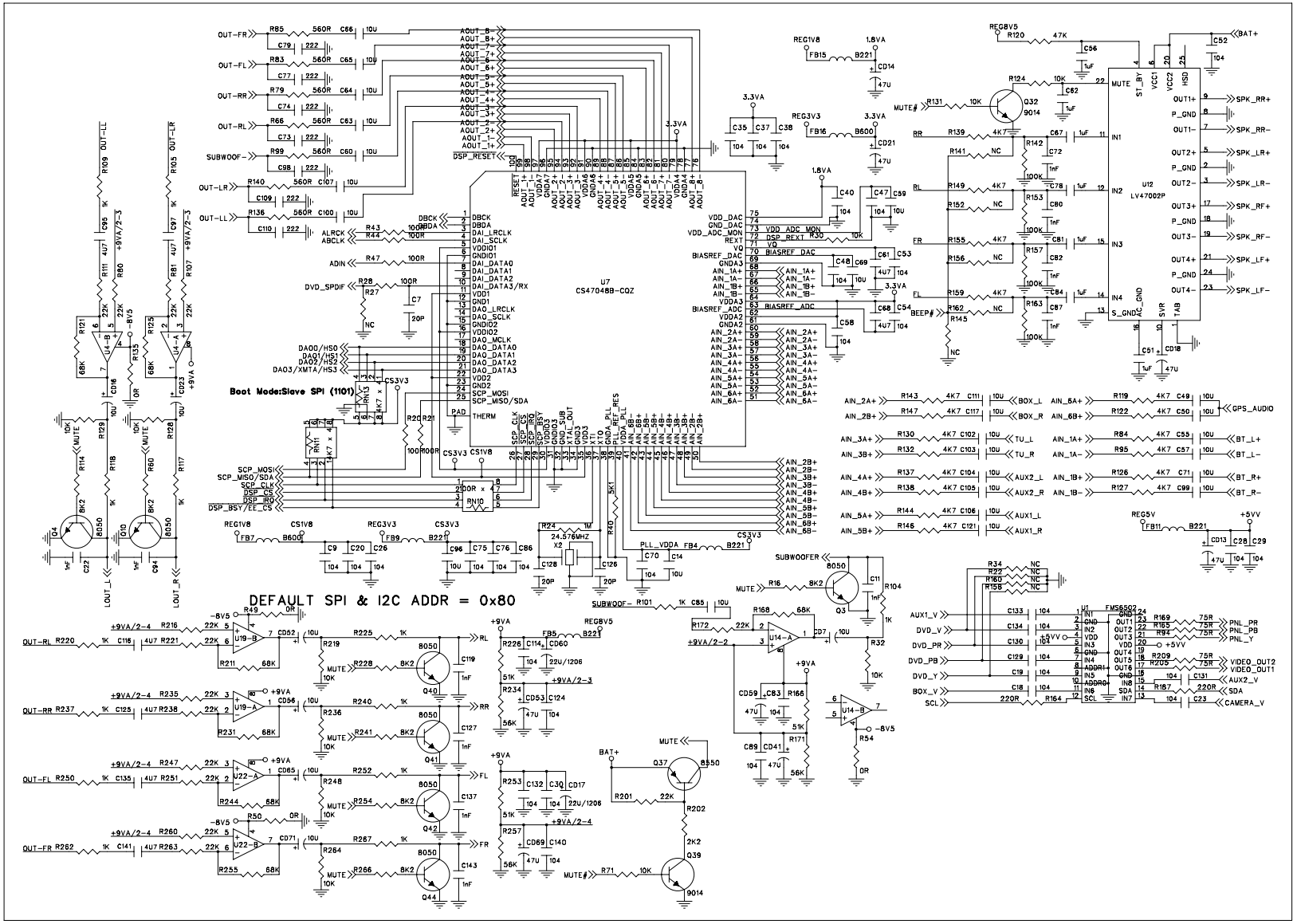


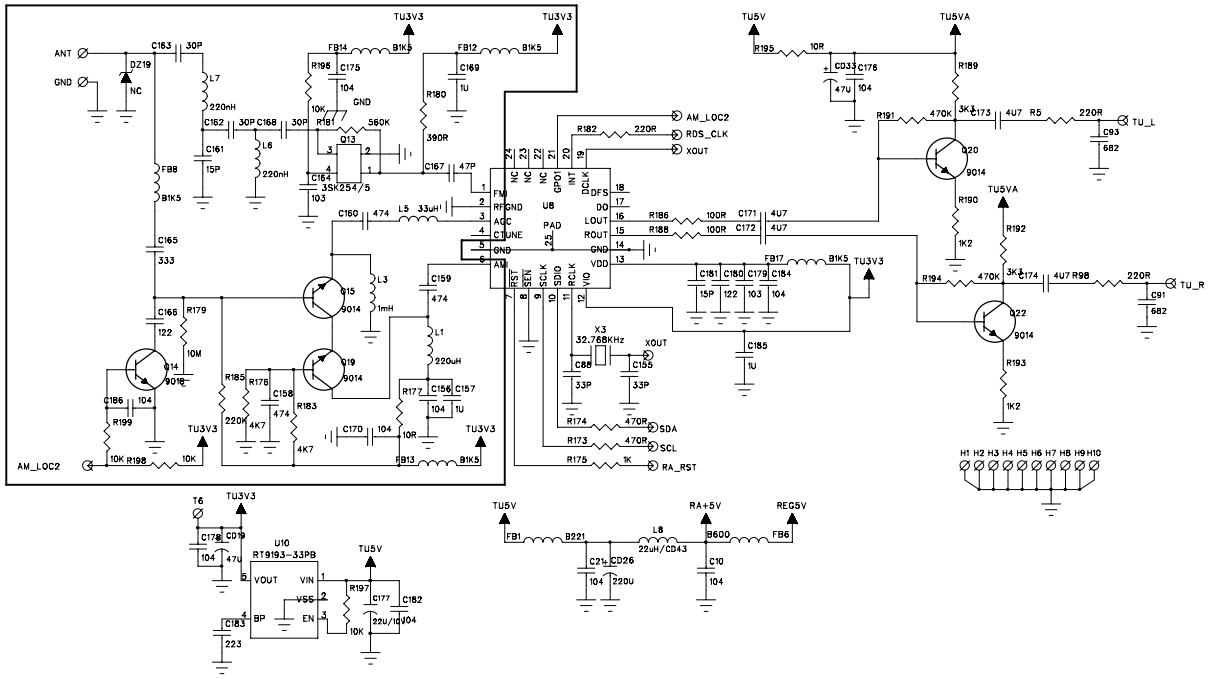

16 PIN Connector
20 PIN JACK
Power IC L5957
Power IC LV47002
Main Board
47048
Volume IC
Video Switcher IC
6502
LCD Board
16580
36 PIN Connector
BT Module
BT Board
36Pin FPC/FFC
36 PIN Connector
36 Pin FFC
TO GPS ANT
36Pin FPC/FFC
Radio IC
4744
MCU Board
MCU IC
38Pin FPC/FFC
30Pin FPC/FFC
36 Pin FPC
5888
Motor IC
TO DVD Deck
Pick-up
24Pin FPC/FFC
8208G
Processor IC
30 Pin FFC
GPS Module
36Pin FPC/FFC
TFT Board
24Pin FPC/FFC
TO 7"TFT
50Pin FPC/FFC
30Pin FPC/FFC
24 Pin FPC
TF Board
TO Touch Screen
24Pin FPC/FFC
Servo Board

CIRCUIT DIAGRAM-MAIN & MCU & TUNER BOARD

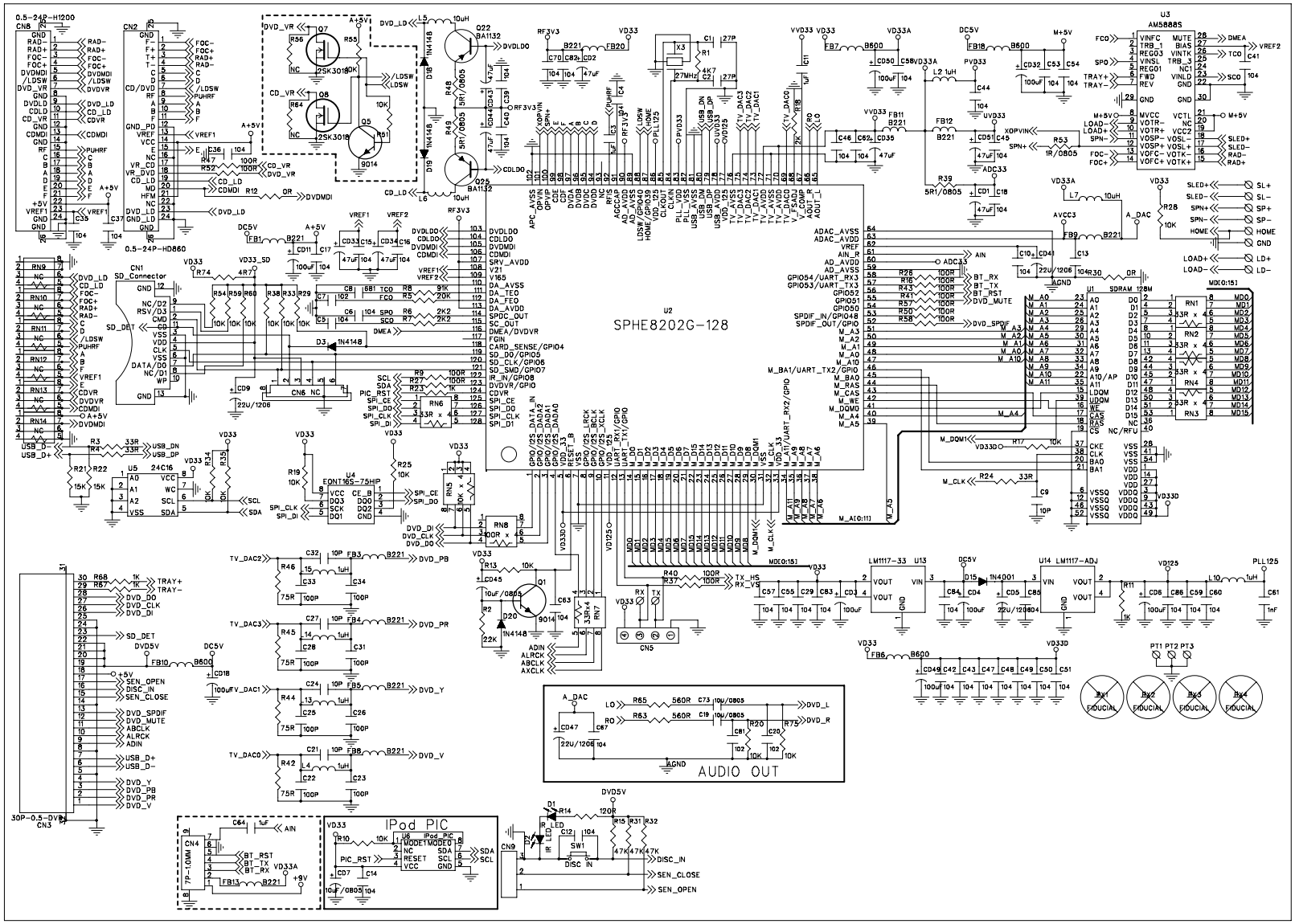



To TFT Board
TX_PNL#
TX_PNL
RX_PNL#
RX_PNL
ICP_Socket
STM8A-64P
PI5C3303
ACC_IN
ACC_DET
ACC_CTL
DSP_RESET
SCL
SDA
SCP_MISO/SDA
SCP_CLK
SCP_MOSI
DSP_BSY/EE_CS
BT_LED
CAMERA_DET
LCD_DA
LCD_CK
BT_MUTE
DVD_RST
DVD_MUTE
NA.
PARK_DET
IR_LINE
IR
IR#
PARK
REVERSE
USB_DP
USB_DET
BUZZER
BEEP#
TX_BT
TX
TX_BOX
TX_SEL
M_RST
RX_BOX
RX_BT
RDS_CLK
MUTE#
RA_RST
TKEY2_DAT
TKEY1_DAT
EC/PNLDET
PNL_SEN1
PNL_SEN2
PNL_SEN3
PNL_CLOSE
PNL_OPEN
SEN_CLOSE
SEN_OPEN
USB_DET
DVD_PS
SD_DET
PNL_Y
PNL_PB
PNL_PR
DISC_IN
TRAY+
TRAY-
PNL+12V
SYS_PS
C+5V
PARK
ACC_IN
DVD_DO
REVERSE
IR
EC/PNLDET
DVD_CLK
DVD_DI
SEN_CLOSE
SEN_OPEN
USB_DET
TKEY1_DAT
REG3V3
RA+5V
K+5V
MUTE#
TU_R
TU_L
GPS_AUDIO
BOX_PS
IR_LINE
TX_BOX
RX_BOX
BEEP#
DSP_CS
DSP_IRQ
SCP_MISO/SDA
DSP_RESET
SCP_CLK
SCP_MOSI
M_RST
TX_BT
RX_BT
SCL
SDA
DSP_BSY/EE_CS
BT_LED
LCD_CS

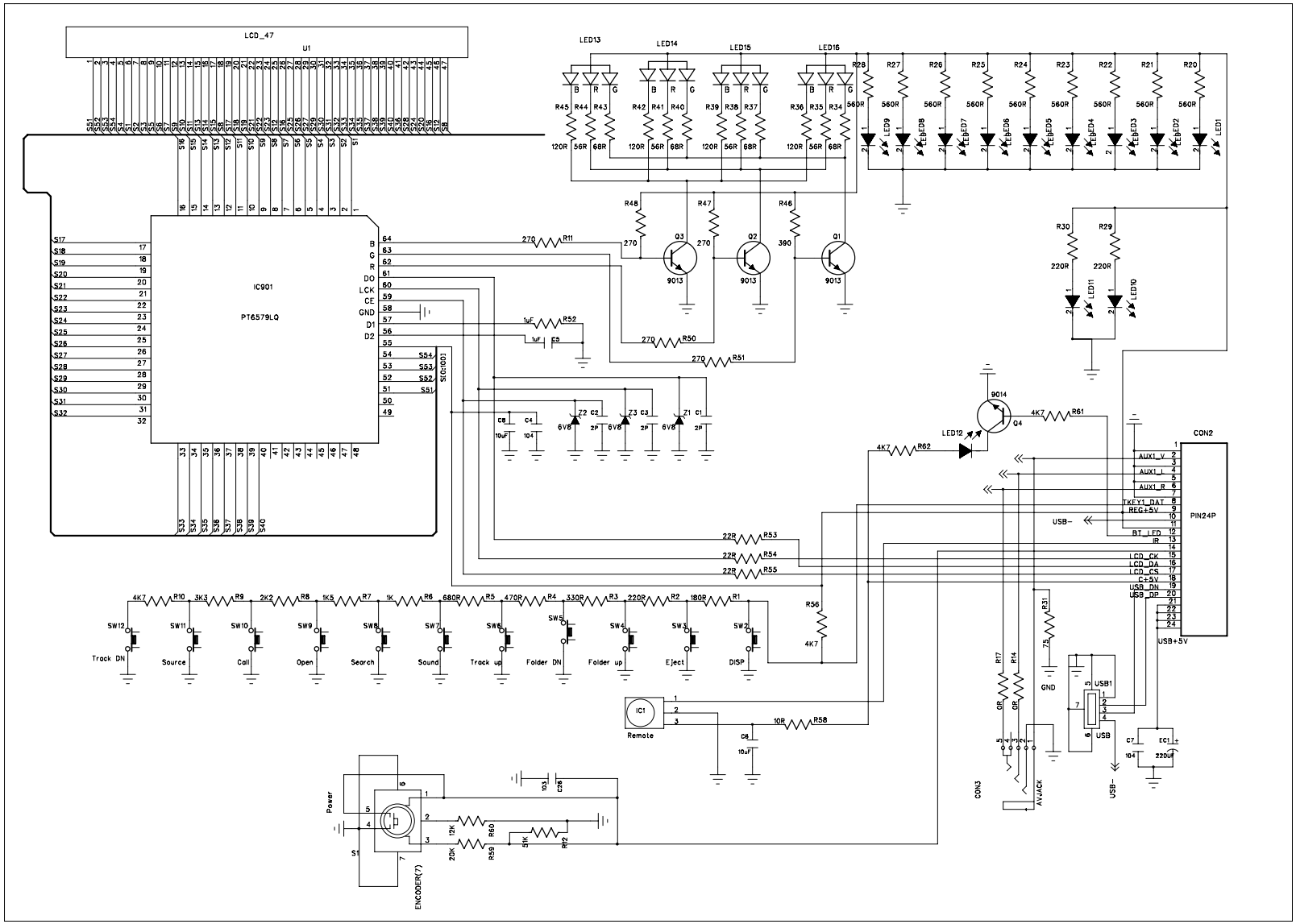

DEFAULT SPI & I2C ADDR = 0x80
Boot Mode:Slave SPI (1101)
U7
CS47048B-CQZ
LV47002P
FMS6502
SUBWOOFER
OUT-FR
OUT-FL
OUT-RR
OUT-RL
OUT-LR
OUT-LL
SUBWOOF-
DSP_RESET
SCP_MOSI
SCP_MISO/SDA
SCP_CLK
DSP_CS
DSP_RQ
DSP_BSY/EE_CS
MUTE
MUTE#
BEEP#
BAT+
+9VA
-8V5
+5VV
3.3VA
1.8VA
GPS_AUDIO
BT_L+
BT_L-
BT_R+
BT_R-
AUX2_V
SDA
CAMERA_V
VIDEO_OUT2
VIDEO_OUT1
PNL_PR
PNL_PB
PNL_Y
SPK_RR+
SPK_RR-
SPK_LR+
SPK_LR-
SPK_RF+
SPK_RF-
SPK_LF+
SPK_LF-

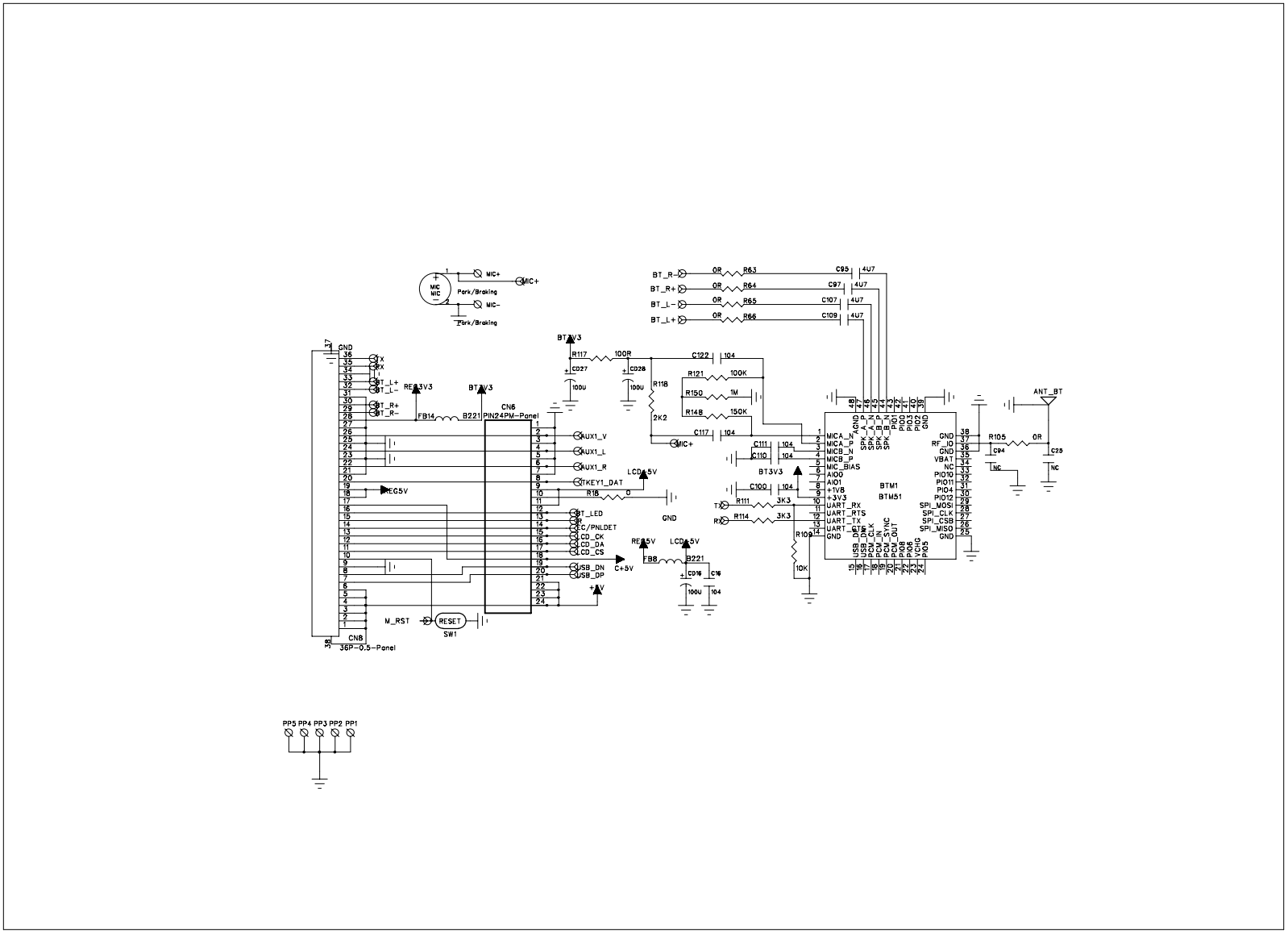

TU3V3
TU5V
TU5VA
ANT
GND
DZ19
NC
C163 30P
L7 220nH
C162 30P
C168 30P
C161 15P
L6 220nH
FB8 B1K5
C165 333
C166 122
R179
10M
Q14 9018
C186 104
R199 10K
R198 10K
AM_LOC2
R185 220K
R176 4K7
C158 474
R183 4K7
FB14 B1K5
R196 10K
C175 104
R181 560K
Q13 3SK254/5
C164 103
C167 47P
C160 474
L5 33uH
Q15 9014
L3 1mH
C159 474
L1 220uH
Q19 9014
C170 104
10R
FB13 B1K5
FB12 B1K5
C169 1U
R180 390R
R195 10R
CD33 47U
C176 104
R189 3K3
R191 470K
C173 4U7
R5 220R
TU_L
C93 682
Q20 9014
R190 1K2
R192
R194 470K
C174 4U7
R98 220R
TU_R
C91 682
Q22 9014
R193 1K2
R182 220R
AM_LOC2
RDS_CLK
XOUT
R186 100R
C171 4U7
R188 100R
C172 4U7
FB17 B1K5
C181 15P
C180 122
C179 103
C184 104
C185 1U
X3 32.768KHz
C88 33P
C155 33P
R174 470R
SDA
R173 470R
SCL
R175 1K
RA_RST
U8
NC NC GPO1 INT DCLK DFS DO LOUT ROUT GND VDD
FM RFGND AGC CTUNE GND AD
PAD
RST SEN SCLK SDIO RCLK VIO
H1 H2 H3 H4 H5 H6 H7 H8 H9 H10
T6
U10
RT9193-33PB
VOUT VIN VSS EN BP
C178 CD19 47U
C183 223
R197 10K
C177 22U/10
C182 104
TU5V
FB1 B221
L8 22uH/CD43
C21 CD26 104 220U
RA+5V
B600
C10 104
REG5V
FB6

CIRCUIT DIAGRAM-SERVO BOARD

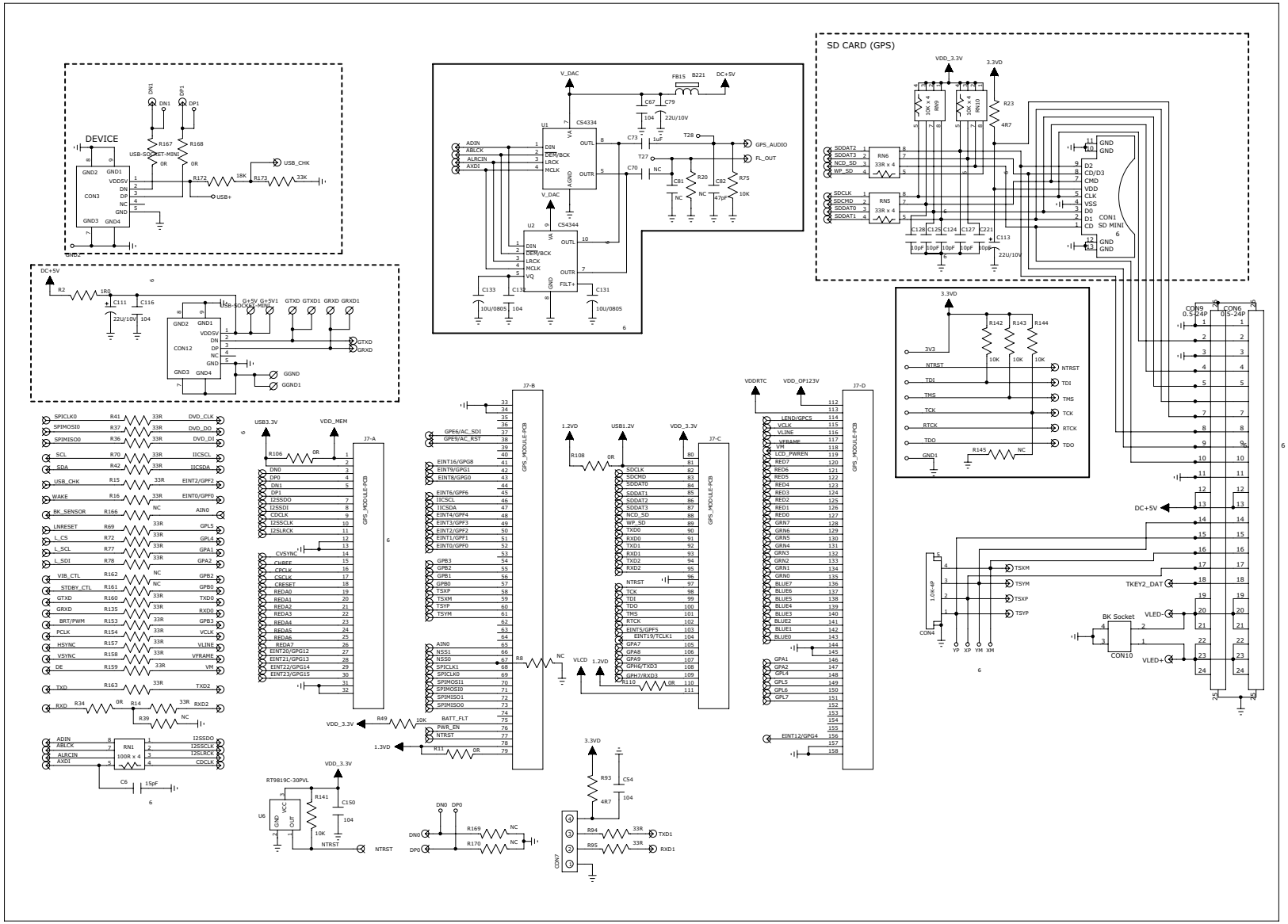


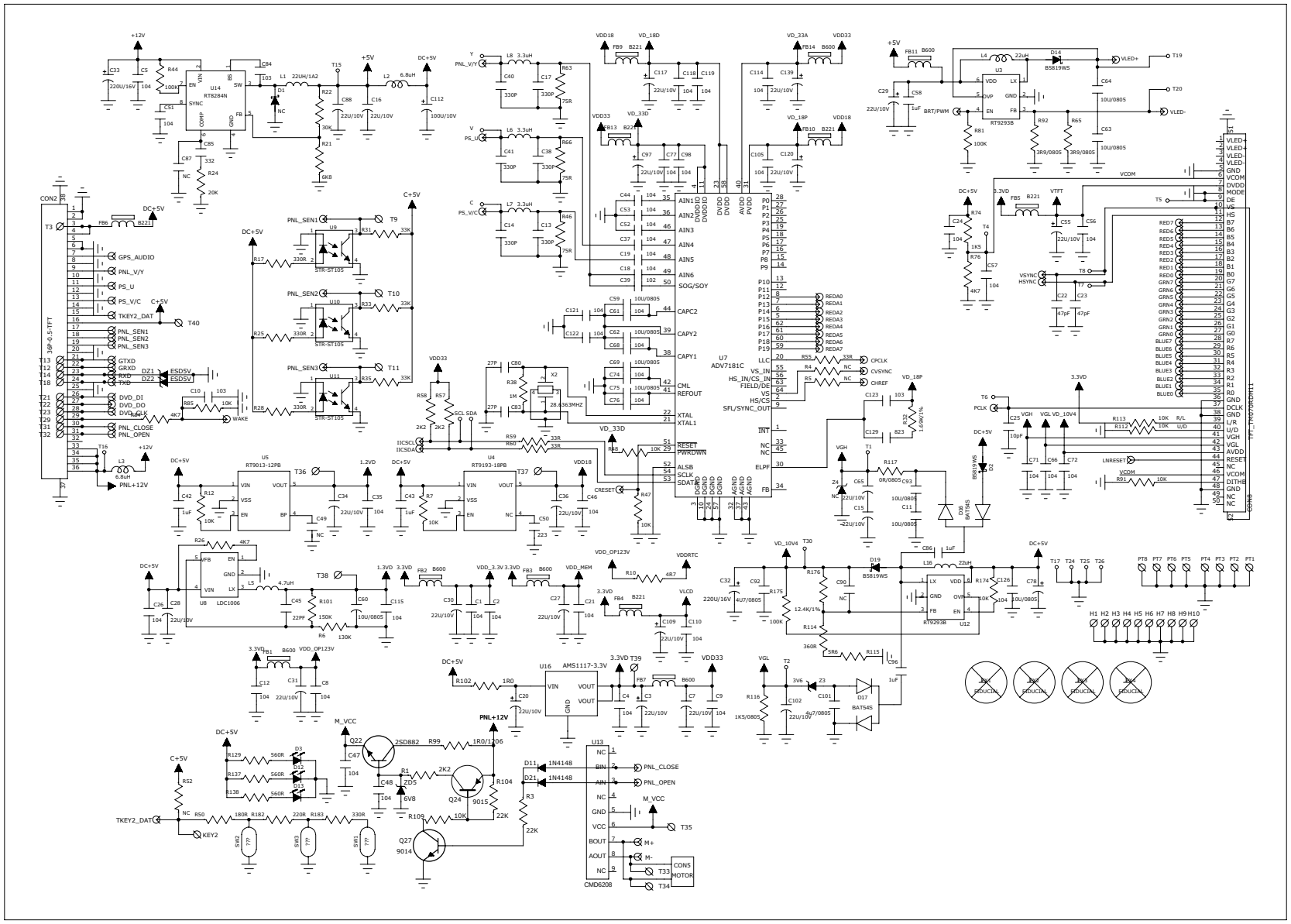
CIRCUIT DIAGRAM-PANEL & BT BOARD



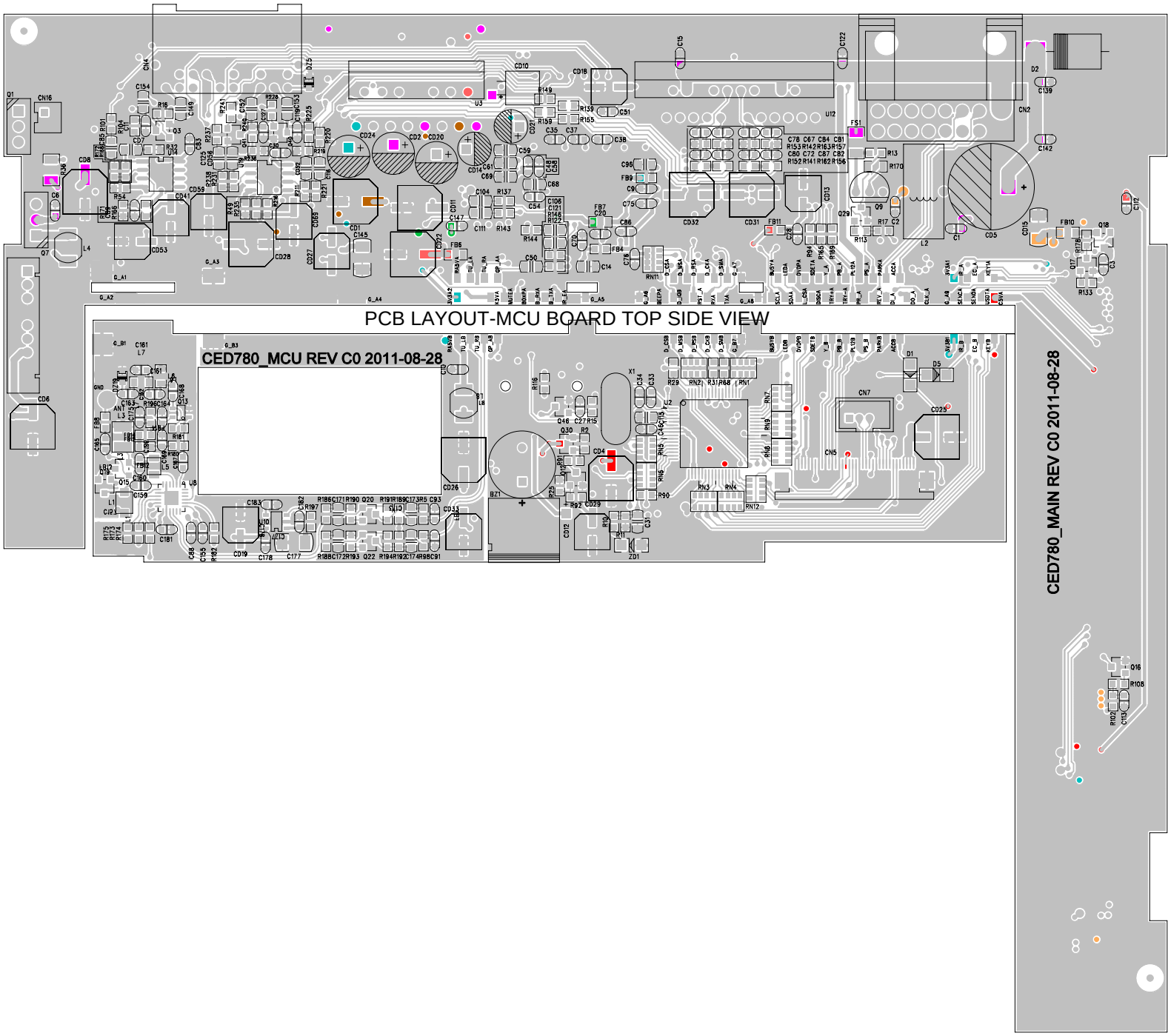

MIC
Park/Braking
MIC+
MIC-
BT_R-
BT_R+
BT_L-
BT_L+
R63
R64
R65
R66
C95
C97
C107
C109
4U7
BT3V3
R117
100R
C027
C026
100U
C122
104
R121
100K
R150
1M
R148
150K
R118
2K2
C117
C111
C110
CN6
PIN24PM-Panel
FB14
B221
REG3V3
REG5V
LCD5.5V
AUX1_V
AUX1_L
AUX1_R
KEY1_DAT
R18
0
BT_LED
EC/PNLDET
LCD_CK
LCD_DA
LCD_CS
USB_DN
USB_DP
C+5V
+5V
GND
M_RST
RESET
SW1
CN8
36P-0.5-Panel
BTM1
BTM51
MICA_N
MICA_P
MICB_N
MICB_P
MIC_BIAS
AIOO
AIO1
+1V8
+3V3
UART_RX
UART_RTS
UART_TX
UART_CTS
SPI_MOSI
SPI_CLK
SPI_CSB
SPI_MISO
R111
R114
3K3
R109
10K
ANT_BT
R105
C94
C25
NC
PP5 PP4 PP3 PP2 PP1

CIRCUIT DIAGRAM-PANEL TFT & SD BOARD

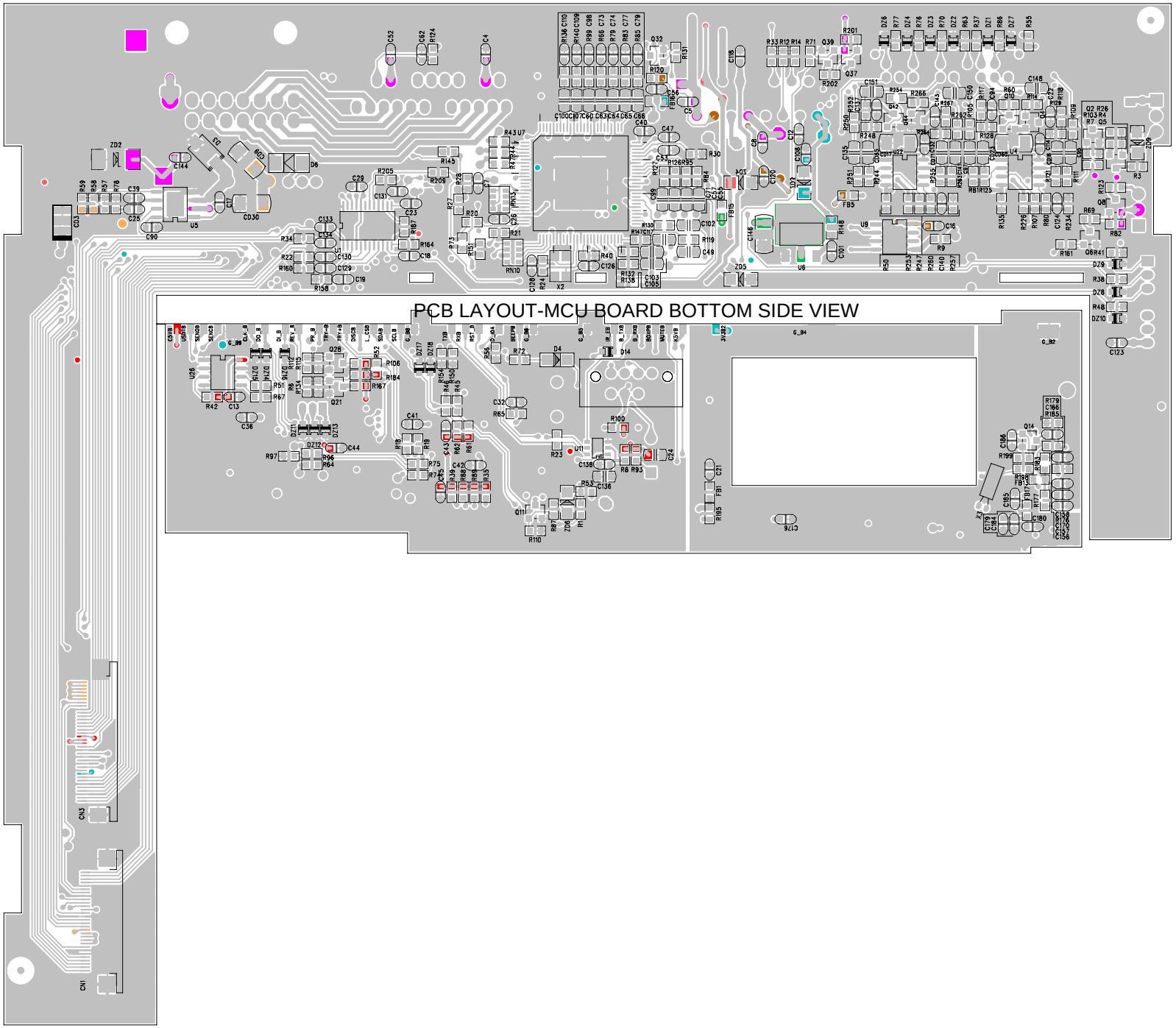




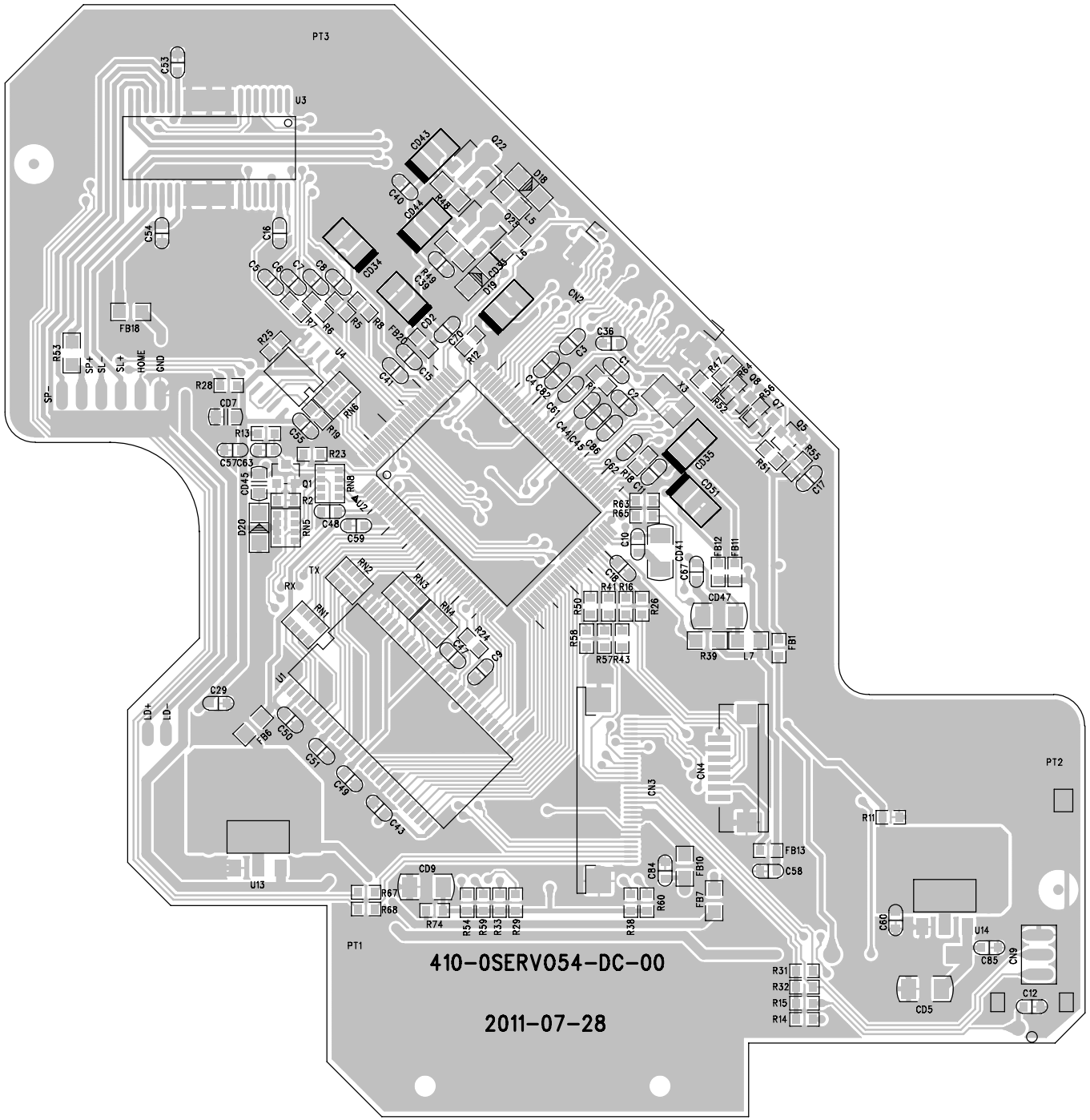
PCB LAYOUT-MAIN BOARD TOP SIDE VIEW



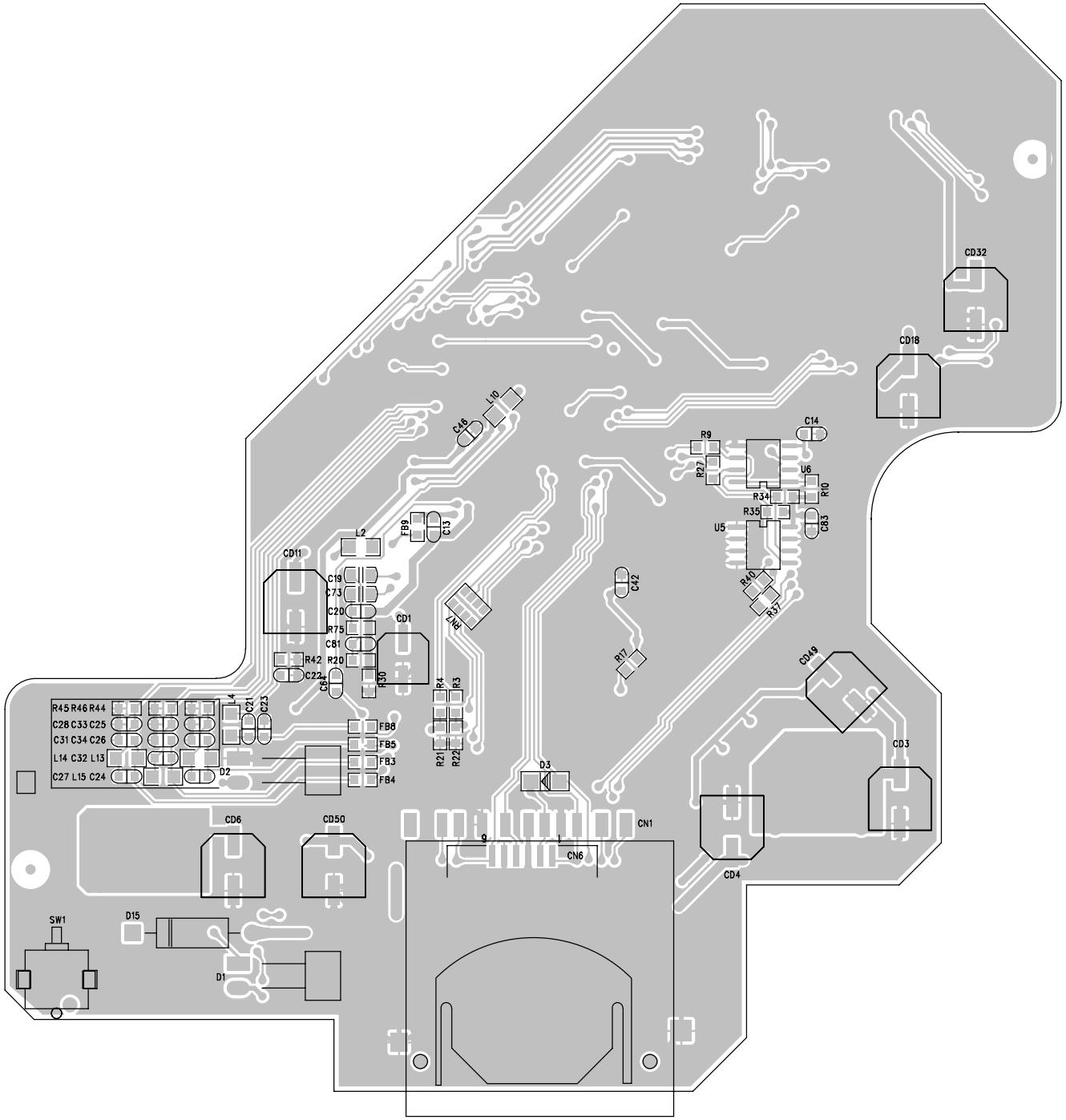
PCB LAYOUT-MAIN BOARD BOTTOM SIDE VIEW



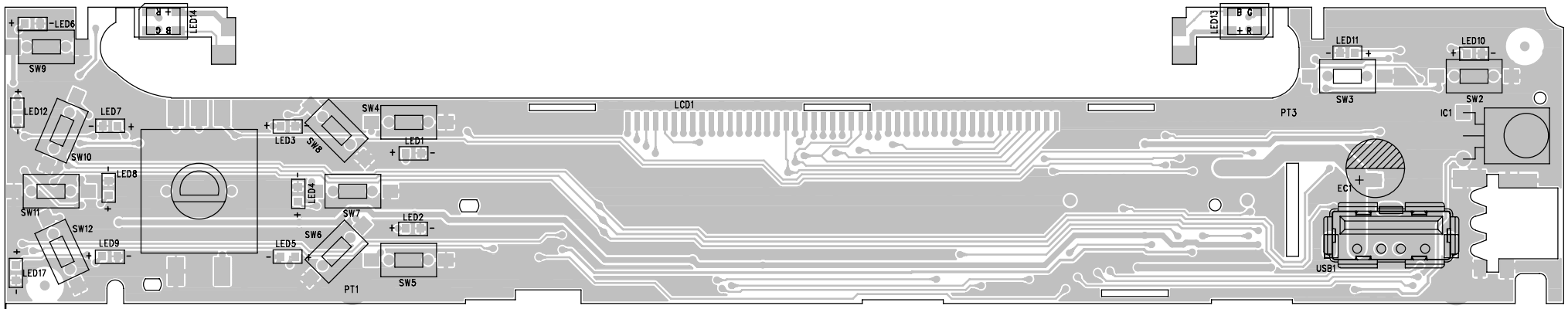
PCB LAYOUT-SERVO BOARD TOP SIDE VIEW



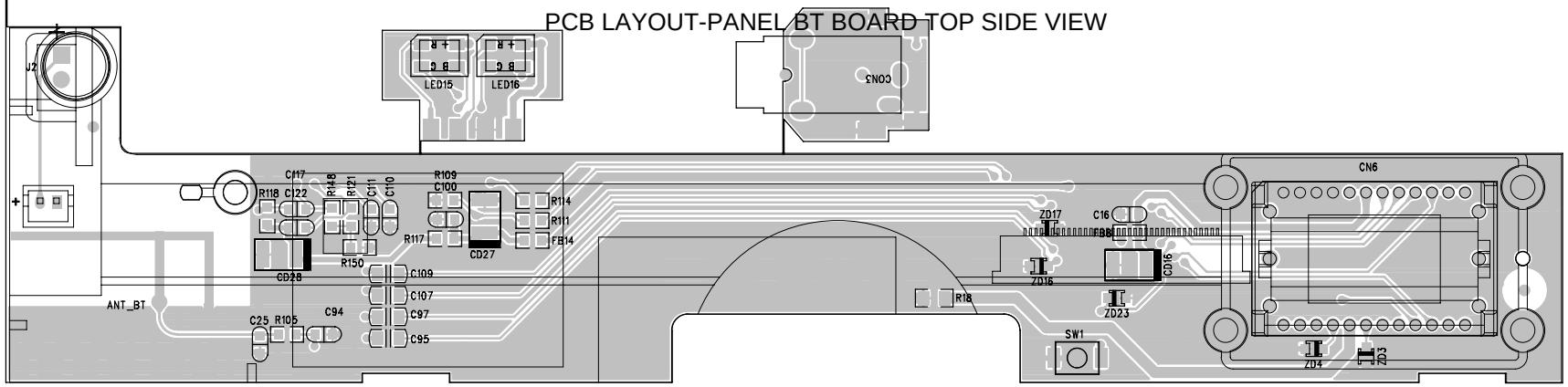
PCB LAYOUT-SERVO BOARD BOTTOM SIDE VIEW



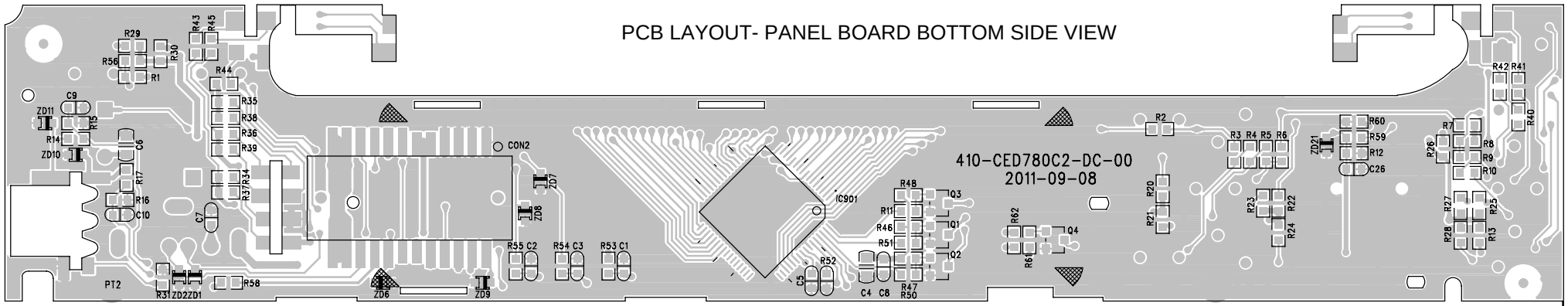
PCB LAYOUT-PANEL BOARD TOP SIDE VIEW



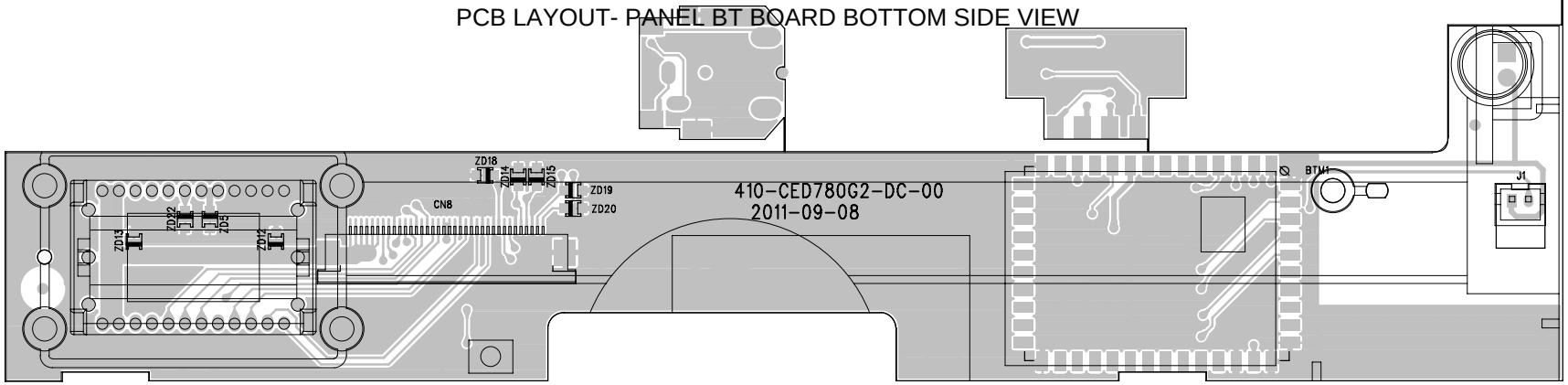
PCB LAYOUT-PANEL BT BOARD TOP SIDE VIEW



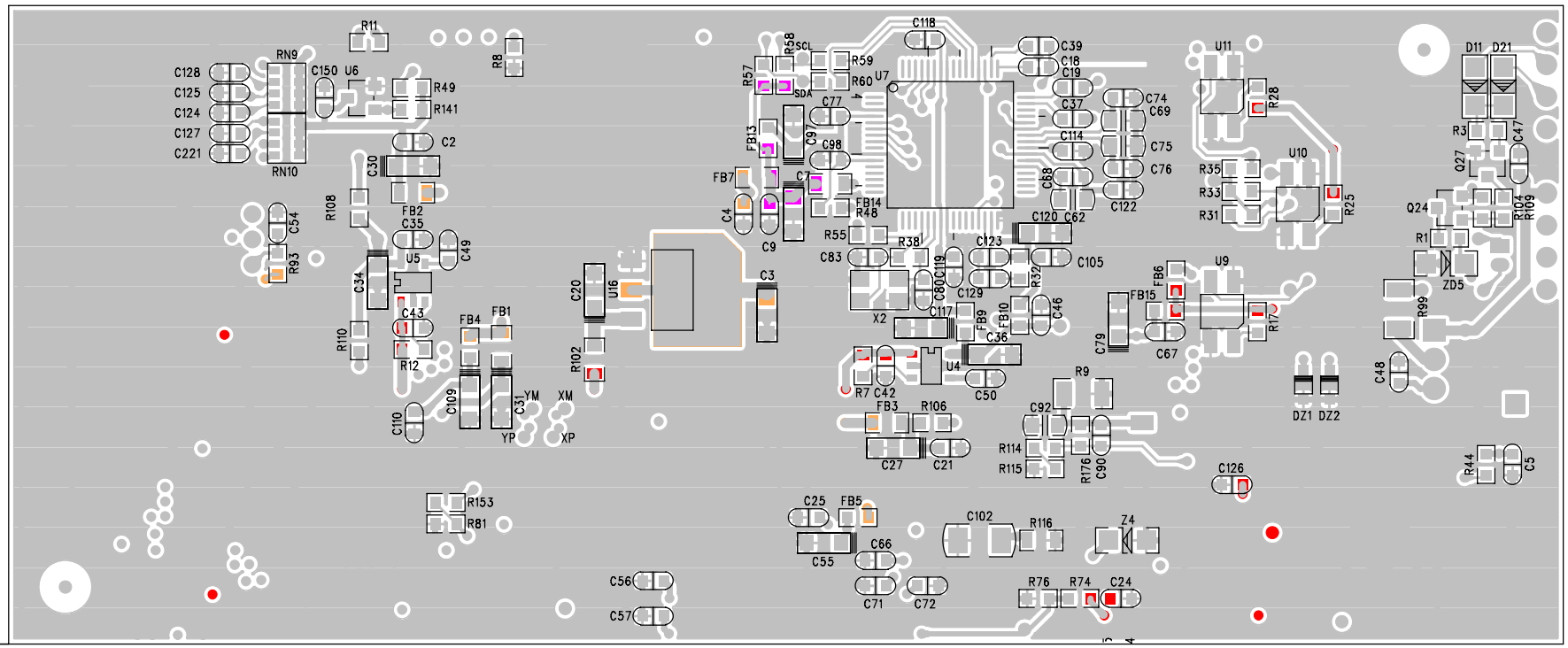
PCB LAYOUT- PANEL BOARD BOTTOM SIDE VIEW



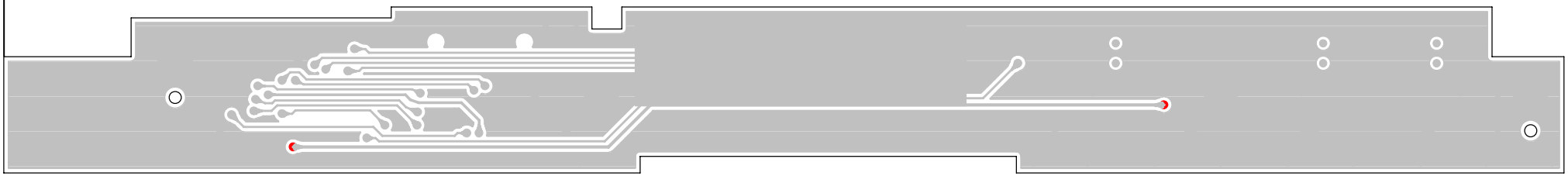
PCB LAYOUT- PANEL BT BOARD BOTTOM SIDE VIEW



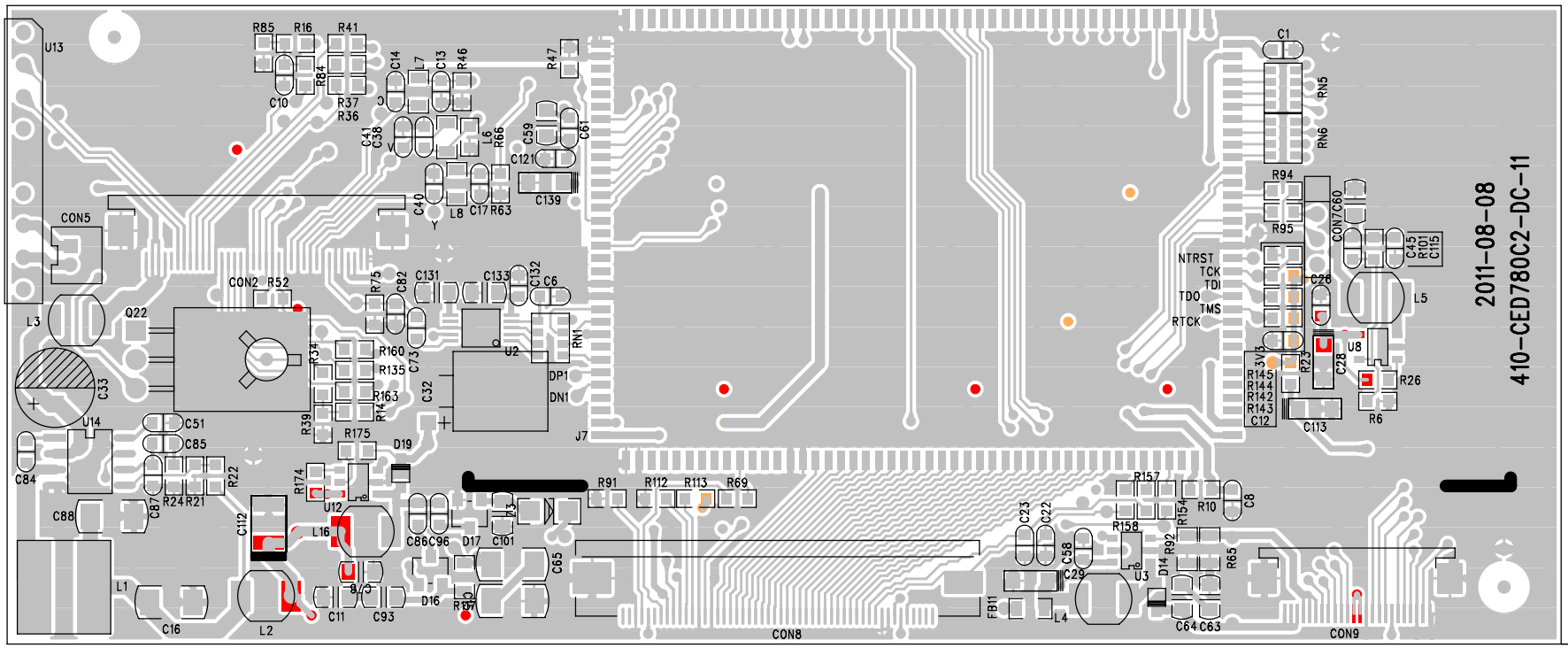
PCB LAYOUT-PANEL TFT BOARD TOP SIDE VIEW



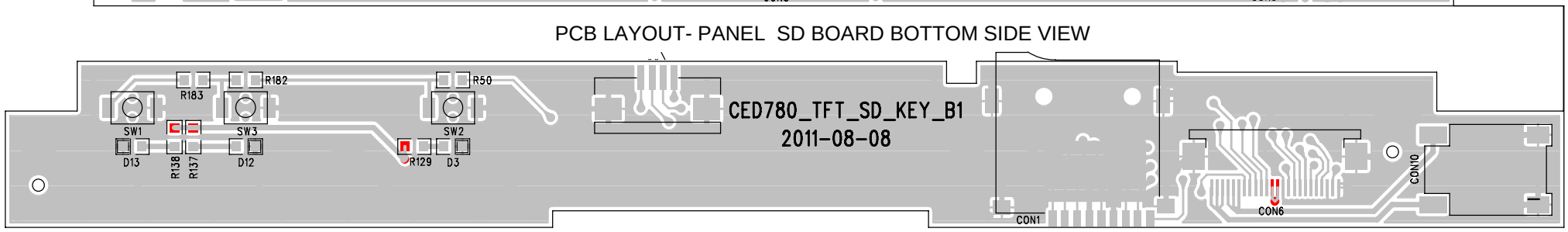
PCB LAYOUT-PANEL SD BOARD TOP SIDE VIEW



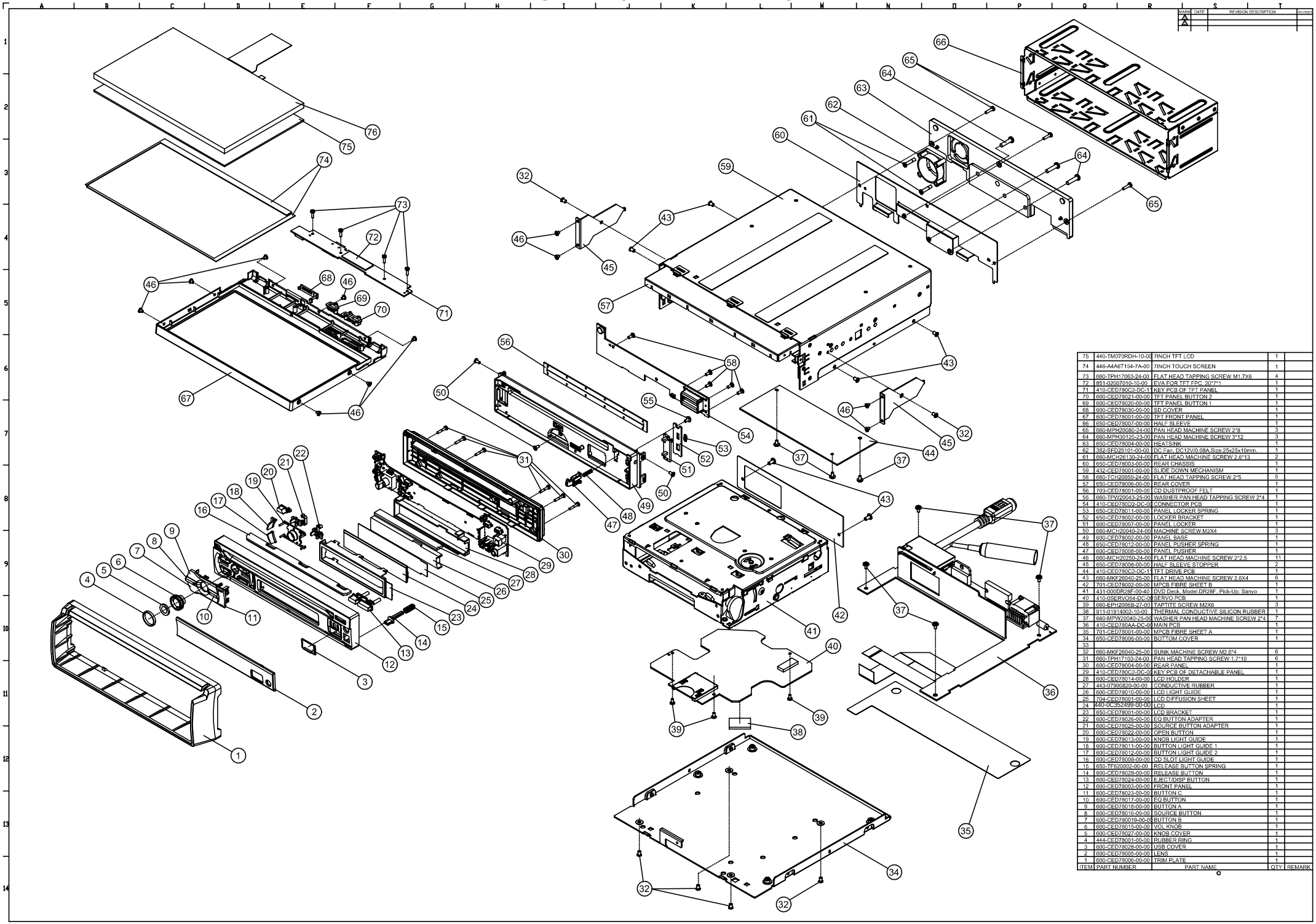
PCB LAYOUT-PANEL TFT BOARD BOTTOM SIDE VIEW



PCB LAYOUT- PANEL SD BOARD BOTTOM SIDE VIEW



SET EXPLODER VIEW DRAWING



ITEM	PART NUMBER	PART NAME	QTY	REMARK
75	440-TM070RDH-10-00	7INCH TFT LCD	1	
74	446-A4A6T154-7A-00	7INCH TOUCH SCREEN	1	
73	660-TPH17063-24-00	FLAT HEAD TAPPING SCREW M1.7X6	4	
72	851-02007010-10-00	EVA FOR TFT FPC, 20*7*1	1	
71	410-CED780C2-DC-11	KEY PCB OF TFT PANEL	1	
70	600-CED78021-00-00	TFT PANEL BUTTON 2	1	
69	600-CED78020-00-00	TFT PANEL BUTTON 1	1	
68	600-CED78030-00-00	SD COVER	1	
67	600-CED78001-00-00	TFT FRONT PANEL	1	
66	650-CED78007-00-00	HALF SLEEVE	1	
65	660-MPH20080-24-00	PAN HEAD MACHINE SCREW 2*8	3	
64	660-MPH30120-23-00	PAN HEAD MACHINE SCREW 3*12	3	
63	650-CED78004-00-00	HEATSINK	1	
62	382-SFD25101-00-00	DC Fan, DC12V/0.08A,Size:25x25x10mm,	1	
61	660-MCH28130-24-00	FLAT HEAD MACHINE SCREW 2.6*13	2	
60	650-CED78003-00-00	REAR CHASSIS	1	
59	432-CED78001-00-00	SLIDE DOWN MECHANISM	1	
58	660-TCH20050-24-00	FLAT HEAD TAPPING SCREW 2*5	5	
57	650-CED78006-00-00	REAR COVER	1	
56	703-CED78001-00-00	CD DUSTPROOF FELT	1	
55	660-TPW20043-25-00	WASHER PAN HEAD TAPPING SCREW 2*4	1	
54	410-CED780D2-DC-00	CONNECTOR PCB	1	
53	650-CED78011-00-00	PANEL LOCKER SPRING	1	
52	650-CED78002-00-00	LOCKER BRACKET	1	
51	600-CED78007-00-00	PANEL LOCKER	1	
50	660-MCH20040-24-00	MACHINE SCREW M2X4	3	
49	600-CED78002-00-00	PANEL BASE	1	
48	650-CED78012-00-00	PANEL PUSHER SPRING	1	
47	600-CED78008-00-00	PANEL PUSHER	1	
46	660-MCH20250-24-00	FLAT HEAD MACHINE SCREW 2*2.5	11	
45	650-CED78008-00-00	HALF SLEEVE STOPPER	2	
44	410-CED780C2-DC-11	TFT DRIVE PCB	1	
43	660-MKF26040-25-00	FLAT HEAD MACHINE SCREW 2.6X4	6	
42	701-CED78002-00-00	MPCB FIBRE SHEET B	1	
41	431-000DR28F-00-40	DVD Deck, Model:DR28F, Pick-Up: Sanyo	1	
40	410-0SERVO54-DC-00	SERVO PCB	1	
39	660-EPH20068-27-00	TAPTITE SCREW M2X6	3	
38	911-0191402-10-00	THERMAL CONDUCTIVE SILICON RUBBER	1	
37	660-MPW20040-25-00	WASHER PAN HEAD MACHINE SCREW 2*4	7	
36	410-CED780AA-DC-00	MAIN PCB	1	
35	701-CED78001-00-00	MPCB FIBRE SHEET A	1	
34	650-CED78006-00-00	BOTTOM COVER	1	
33				
32	660-MKF26040-25-00	SUNK MACHINE SCREW M2.6*4	6	
31	660-TPH17103-24-00	PAN HEAD TAPPING SCREW 1.7*10	6	
30	600-CED78004-00-00	REAR PANEL	1	
29	410-CED78C2-DC-00	KEY PCB OF DETACHABLE PANEL	1	
28	600-CED78014-00-00	LCD HOLDER	1	
27	443-07900820-00-00	CONDUCTIVE RUBBER	1	
26	600-CED78010-00-00	LCD LIGHT GUIDE	1	
25	704-CED78001-00-00	LCD DIFFUSION SHEET	1	
24	440-0C352499-00-00	LCD	1	
23	650-CED78001-00-00	LCD BRACKET	1	
22	600-CED78026-00-00	EQ BUTTON ADAPTER	1	
21	600-CED78025-00-00	SOURCE BUTTON ADAPTER	1	
20	600-CED78022-00-00	OPEN BUTTON	1	
19	600-CED78013-00-00	KNOB LIGHT GUIDE	1	
18	600-CED78011-00-00	BUTTON LIGHT GUIDE 1	1	
17	600-CED78012-00-00	BUTTON LIGHT GUIDE 2	1	
16	600-CED78009-00-00	CD SLOT LIGHT GUIDE	1	
15	650-TF820002-00-00	RELEASE BUTTON SPRING	1	
14	600-CED78029-00-00	RELEASE BUTTON	1	
13	600-CED78024-00-00	EJECT/DISP BUTTON	1	
12	600-CED78003-00-00	FRONT PANEL	1	
11	600-CED78023-00-00	BUTTON C	1	
10	600-CED78017-00-00	EQ BUTTON	1	
9	600-CED78018-00-00	BUTTON A	1	
8	600-CED78016-00-00	SOURCE BUTTON	1	
7	600-CED780019-00-00	BUTTON B	1	
6	600-CED78015-00-00	VOL KNOB	1	
5	600-CED78027-00-00	KNOB COVER	1	
4	444-CED78001-00-00	RUBBER RING	1	
3	600-CED78028-00-00	USB COVER	1	
2	600-CED78005-00-00	LENS	1	
1	600-CED78006-00-00	TRIM PLATE	1	

Trouble shooting

Product Model		**CED780**	Area	All area	Tate	2011-11-28	
NO.	failure phenomena	failure cause					remark
1	NO Power	a. To check whether the CN2(14pin) connector of the tail of the unit is connect well , Whether it is loose of the 15A fuse of the Filter Box, or insert non in place.					
		b. To check whether there is any contamination and bad contact on the 24 Pin male/female connector on the panel and main board.					
		c. To check the U3 of multiple voltage regulator IC,the 9 pin should be +12V0、the 10 pin should be +5V0、 the 1 pin should be +3V3、the 13 pin should be +8V5、the 14 pin should be +5V0.					
		d. To check the 7 pin voltage of the U2(MCU) should be +5V0.					
		e. To check the oscillation frequence of crystal X1 shuold be 16MHz .					
2	7"TFT abnormal	a.To check the connectors of the CON6、CON9，whether the socket of it is loose.					
		b.To Check the voltage of the 33 pin~36 pin of the CON2 ,should be +12V0					
		c.To check the voltage of the L2 of the TFT board,should be +5V0.					
		d.To check the voltage of the cathode of the D14 of the TFT board,should be +10V0.					
		e.If the TFT move defective, to check the U13(6208 IC) and the U9~U11 of the photo reflective, to check whether there is any abnormal of the rotation of the TFT mechanism.					
3	NO audio output	a. To check whether the volume knob is turn to the minimum position.					
		b. To check whether the unit is at MUTE mode, press SOURCE button and check whether it is effective of the input sound source.					
		c. To check whether the connection of 8 PIN audio output wire of ISO connector is correct; wrong connection or short circuit to the ground will caused the protection of the power amplifier(no voltage output).					
		d . To check the circuit of power amplifier U12(LV47002 IC) and VOLUME U7(47048 IC).					
		e. To check the voltage of 22 PIN(MUTE) of power amplifier U12(47002 IC) , normally should be 4V0.					
4	Radio abnormal	a. To check the antenna of the AM/FM tuner.					
		b. To check whether the strength of then input signal of the tuner is too weak.					
		c. To check the voltage of the 13 pin of the U8 of the tuner IC, should be +3V3.					
		d. To check the oscillation frequence of crystal X3 of the tuner IC,shuold be 32.768MHz					

NO.	failure phenomena	failure cause	remark
5	CD/DVD defective	a. To check whether the signal format of the disc is correspond to the request of the unit, whether there is any contamination or damage or light leakage on the surface of the disc.	
		b. To check whether there is any abnormal of the rotation of the deck mechanism, or whether the disc is enter in position.	
		c. To check whether it is normal when reading USB?	
		d. To check whether the 24P FFC of laser pick up is inserted in place, whether the socket of it is loose.	
		e. To check whether there is any contamination or foreign body on the surface of the laser pick up.	
		f. To check the servo board connector of CN3 and the main board connector of CN1, whether the socket of it is loose.	
		g.To check the voltage of the 9 pin ~ 12 pin of the CN1 , should be +5V0.	
		h. To check the switch SW1 on the servo board.	
		i. To check the rotation mechanism of CD/DVD deck.	
6	USB/SD defective	a. To check whether the USB/SD signal format is correspond to the request of the unit.	
		b. To check the voltage of the USB connector of the left first pin , should be +5V.	
		c. To check whether there is any wearing and scratch of the shrapnel and pin of the panel USB.	
		d. To check the servo board connector of CN3 and the main board connector of CN1, whether the socket of it is loose.	
		e.To check whether there is any contamination and bad contact on the male/female connector of the panel and main board. If necessary, can exchange the panel to test whether the defective is occurred by the unit or panel.	
7	AUX defective	a. To check the SOURCE shoule be in MP3-LINK mode.	
		b. To check the AUX IN input signal.	
		c. To check whether there is any contamination and bad contact on the male/female connector of the panel and main board. If necessary, can exchange the panel to test whether the defective is occurred by the unit or panel.	
8	BT defective	a.Check the unit should be in pair with the BT phone connection status	
		b.To check the 9 pin of the BT module,should be +3V3.	
		c.To check the CN8 connector.	
9	GPS defective	a.To check the micro SD memorizer of the map of the GPS.	
		b.To check the GPS antenna of the tail of the unit.	
		c.To check the connectors of the CON2、CON8、CON9，whether the socket of it is loose.	